

Ken W. Davis – Aquatic biologist / wildlife photojournalist

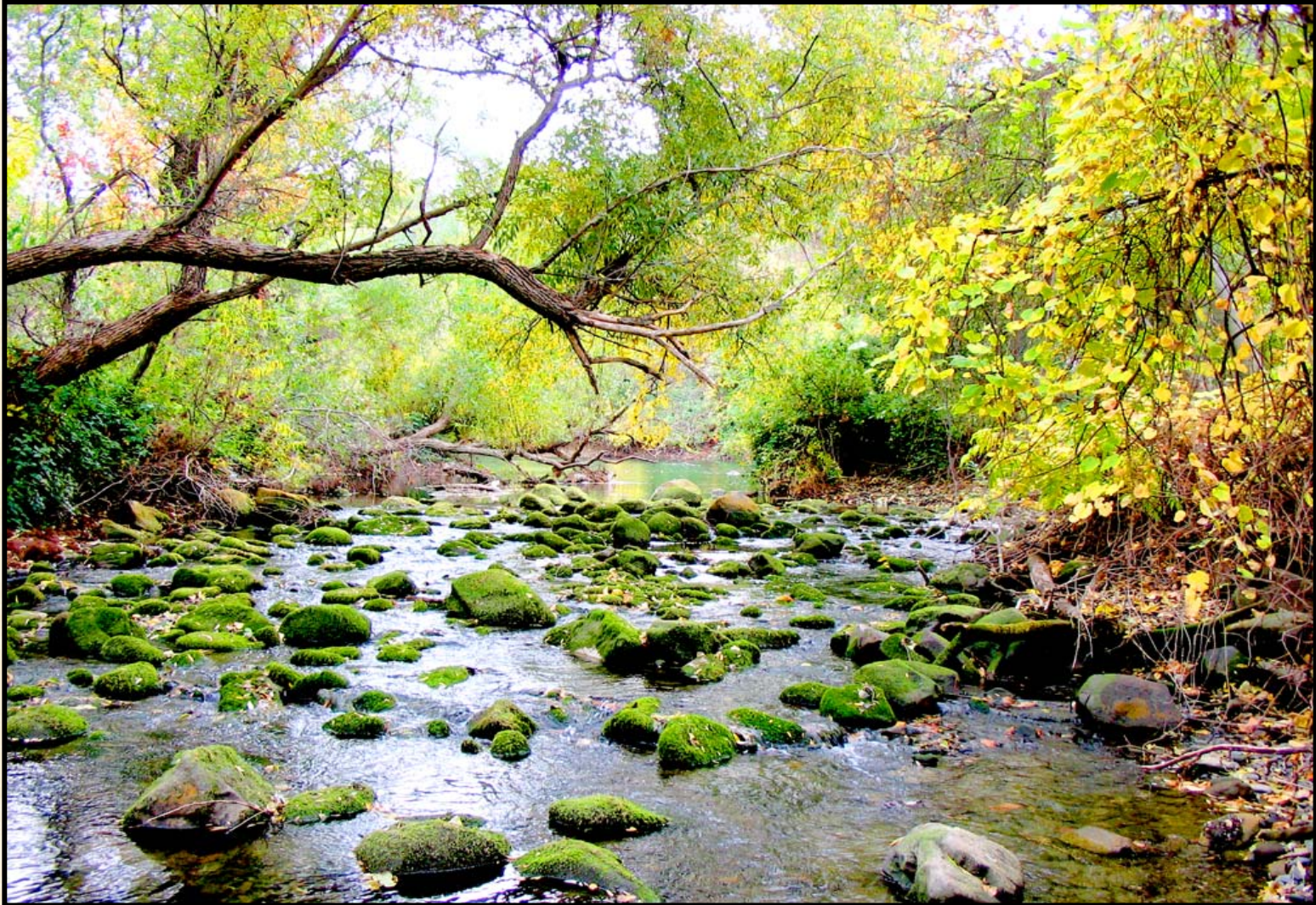
“Measuring Water Quality Improvements”

3rd California NPS Conference

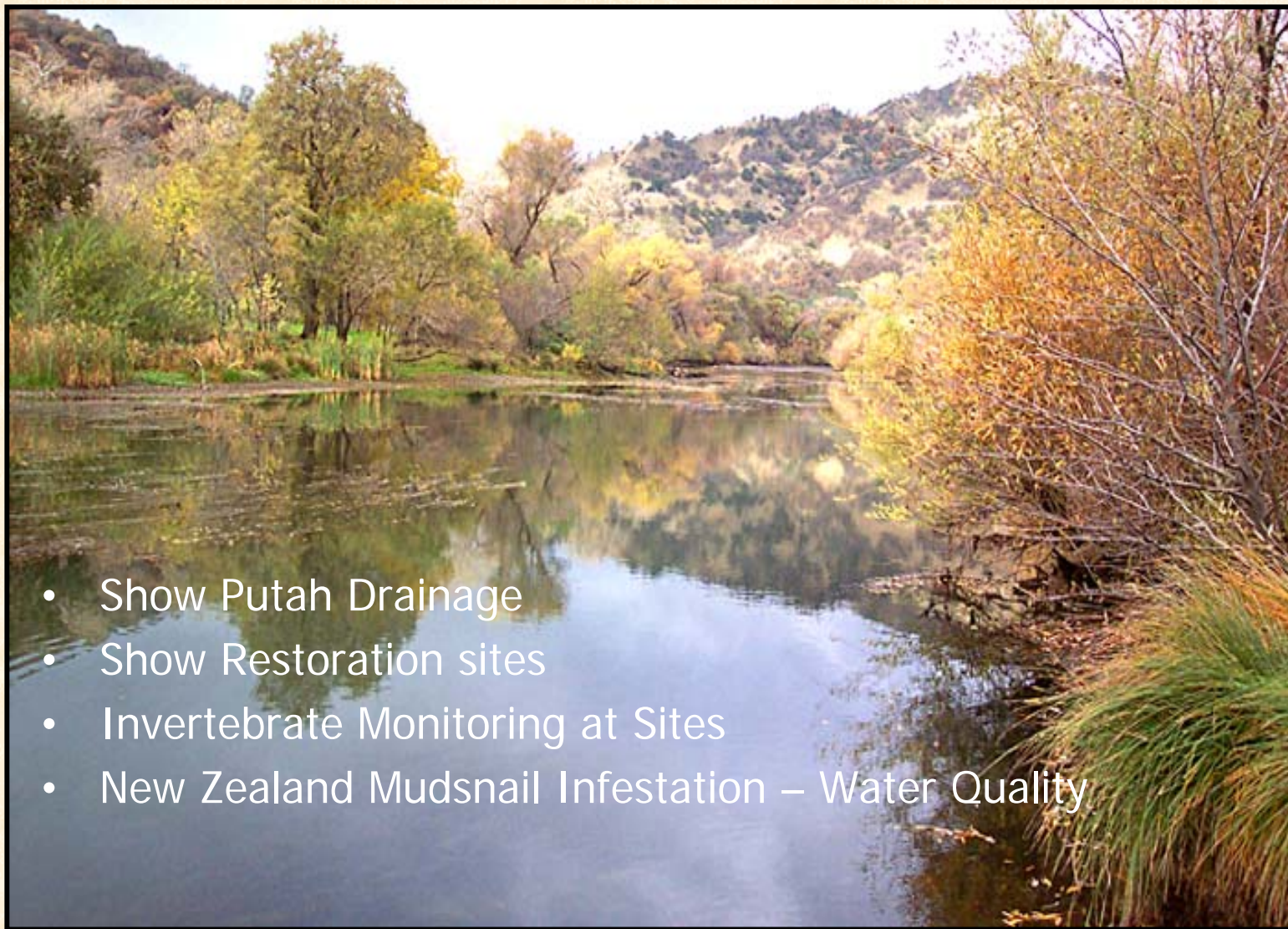
November 7-9, 2005



Monitoring Benthic Macroinvertebrates at Several Putah Creek Restoration Sites

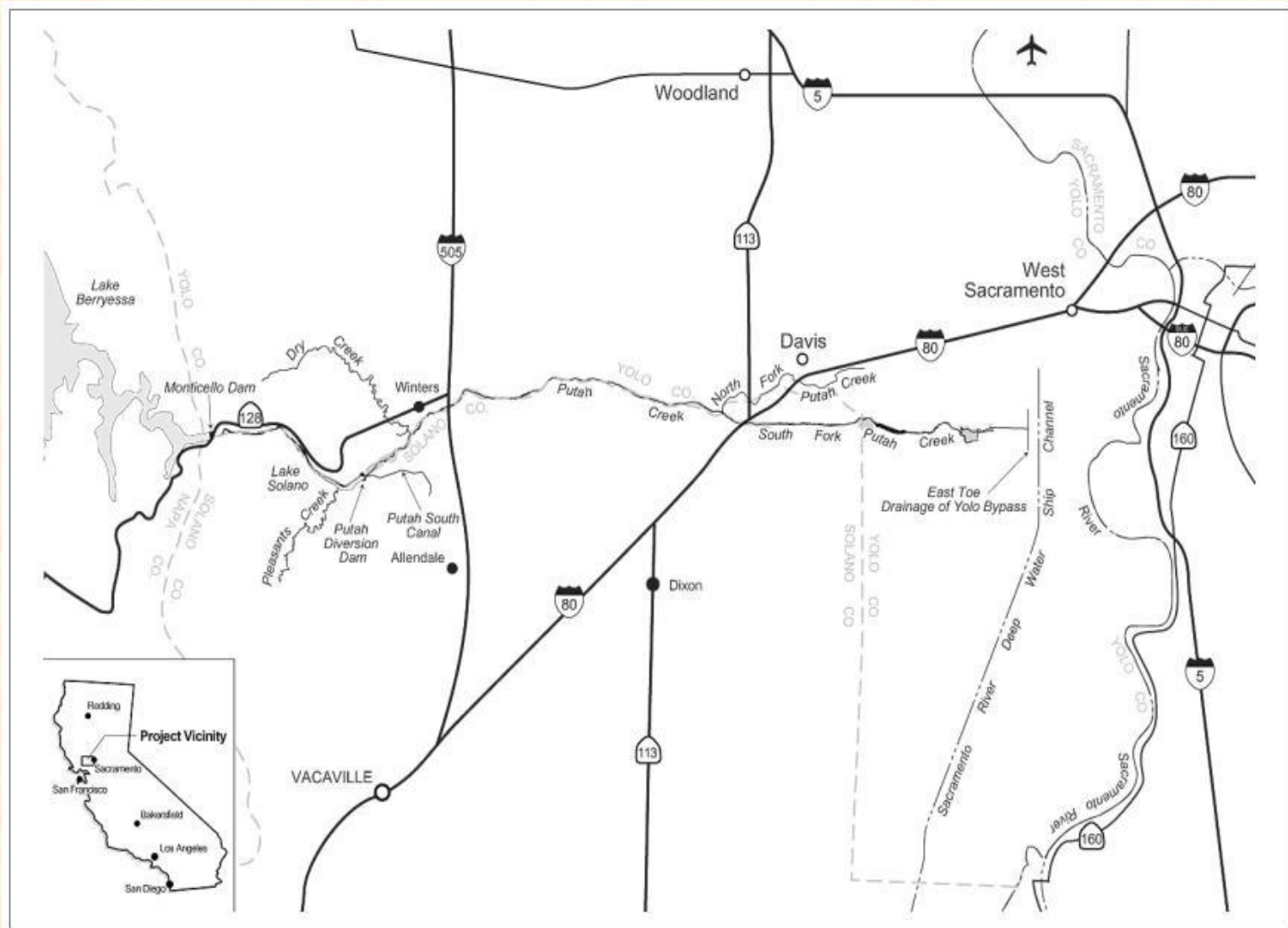


Outline for Presentation



- Show Putah Drainage
- Show Restoration sites
- Invertebrate Monitoring at Sites
- New Zealand Mudsail Infestation – Water Quality

Putah Regional Map

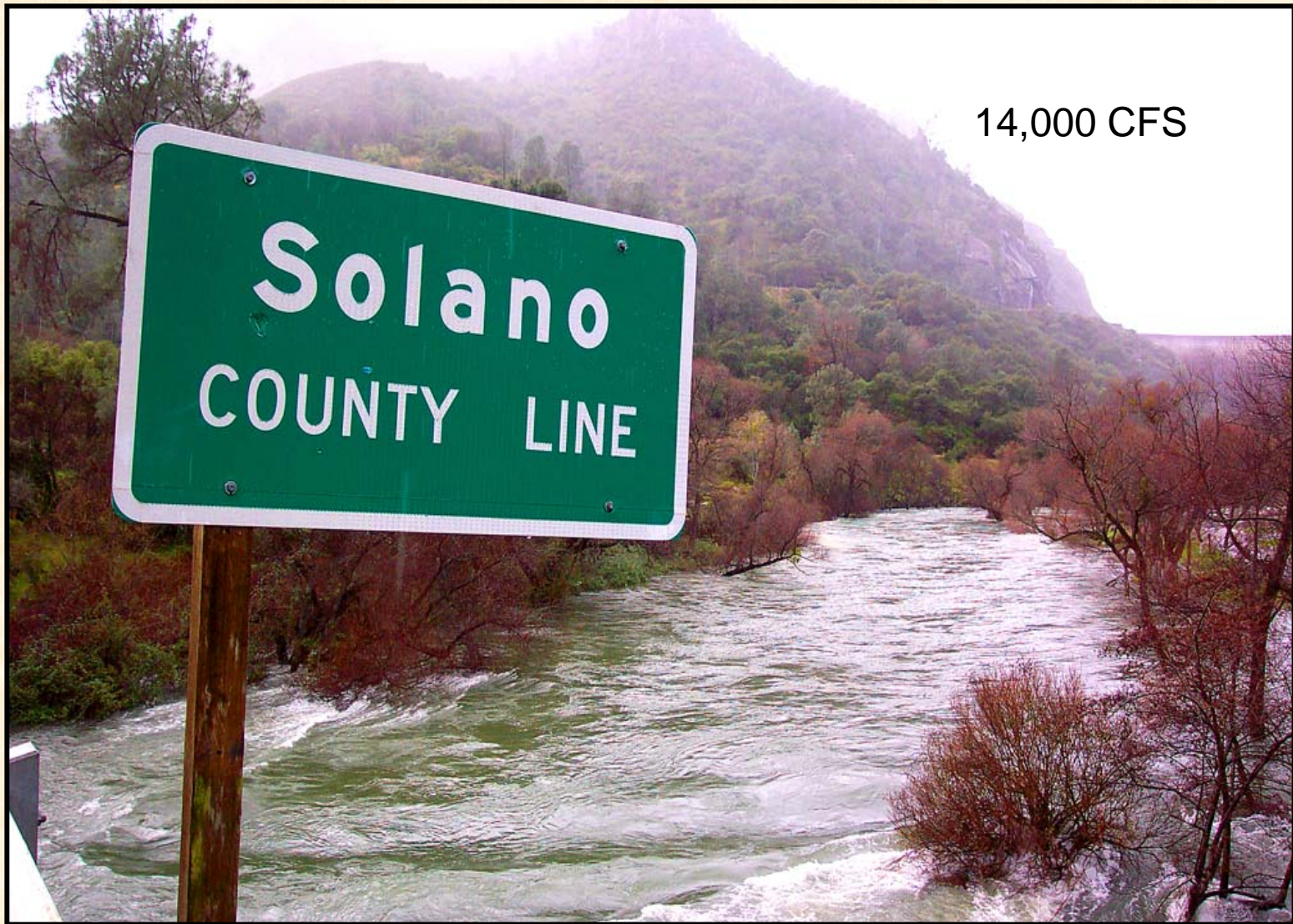


Source: EDAW 2003; California State Automobile Association, Bay and Mountain Section 1999

Putah Creek – Interdam Reach



Glory Hole – Uncontrolled Releases



InterDam Reach



Extensive pools

Interdam Reach – Trophy Trout Area



Lake Solano



Putah Diversion Dam



Putah South Canal



Lower Putah Creek



Numerous Sites Need Restoration



Invasive Removal – Such as Arundo



Restoration Types

- “W” weir construction
- Channel re-alignment
- Invasive removal (part of most projects)



Rich Marovich – Putah Creek Streamkeeper



2001-05 CalFed
Watershed Assessment

Thomas Pate, PE – SCWA

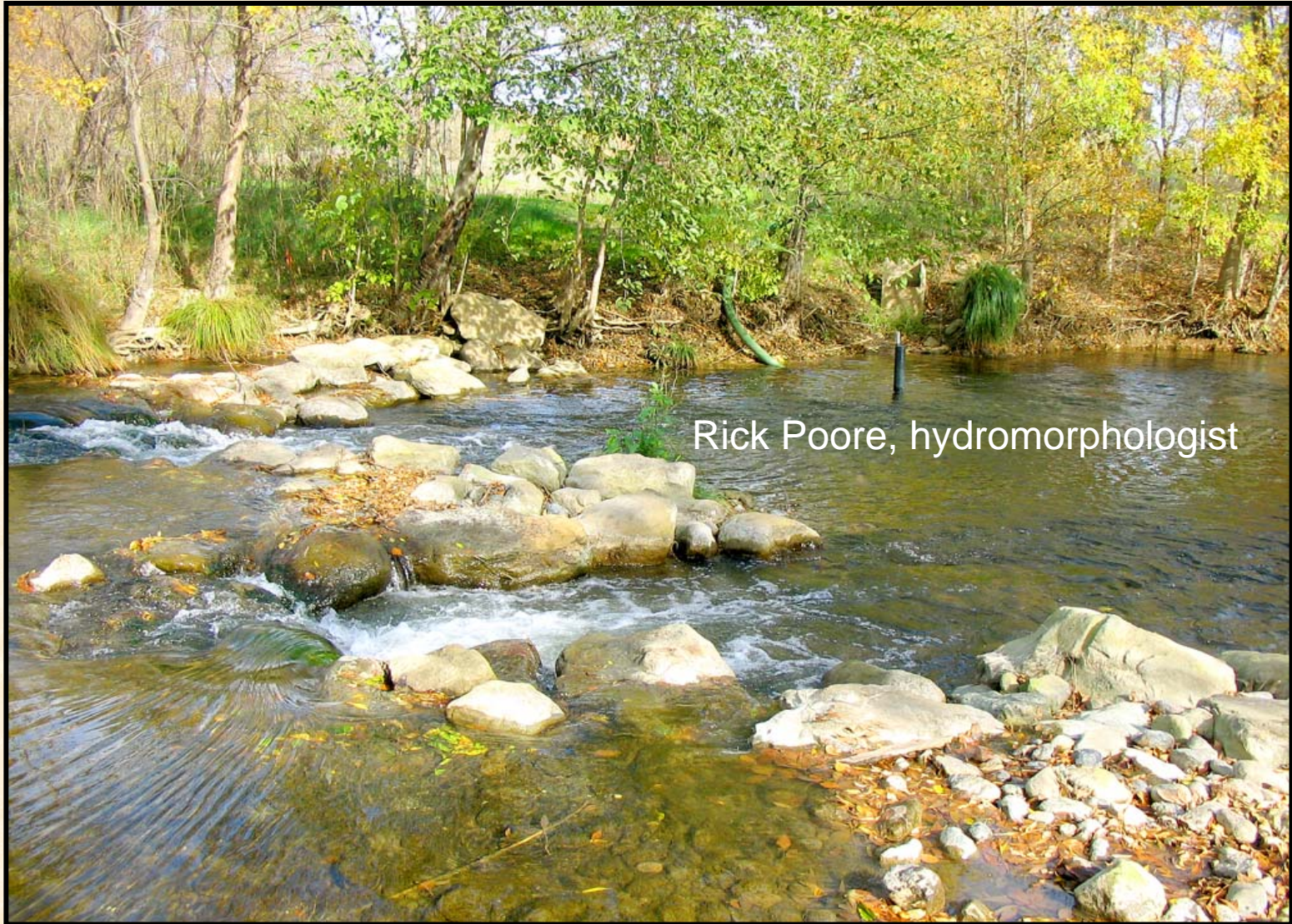
Chris Lee, environmental scientist

Hasbrook Crossing Project

Wildlife Conservation Board – Prop 50
USFWS – Partners for Wildlife

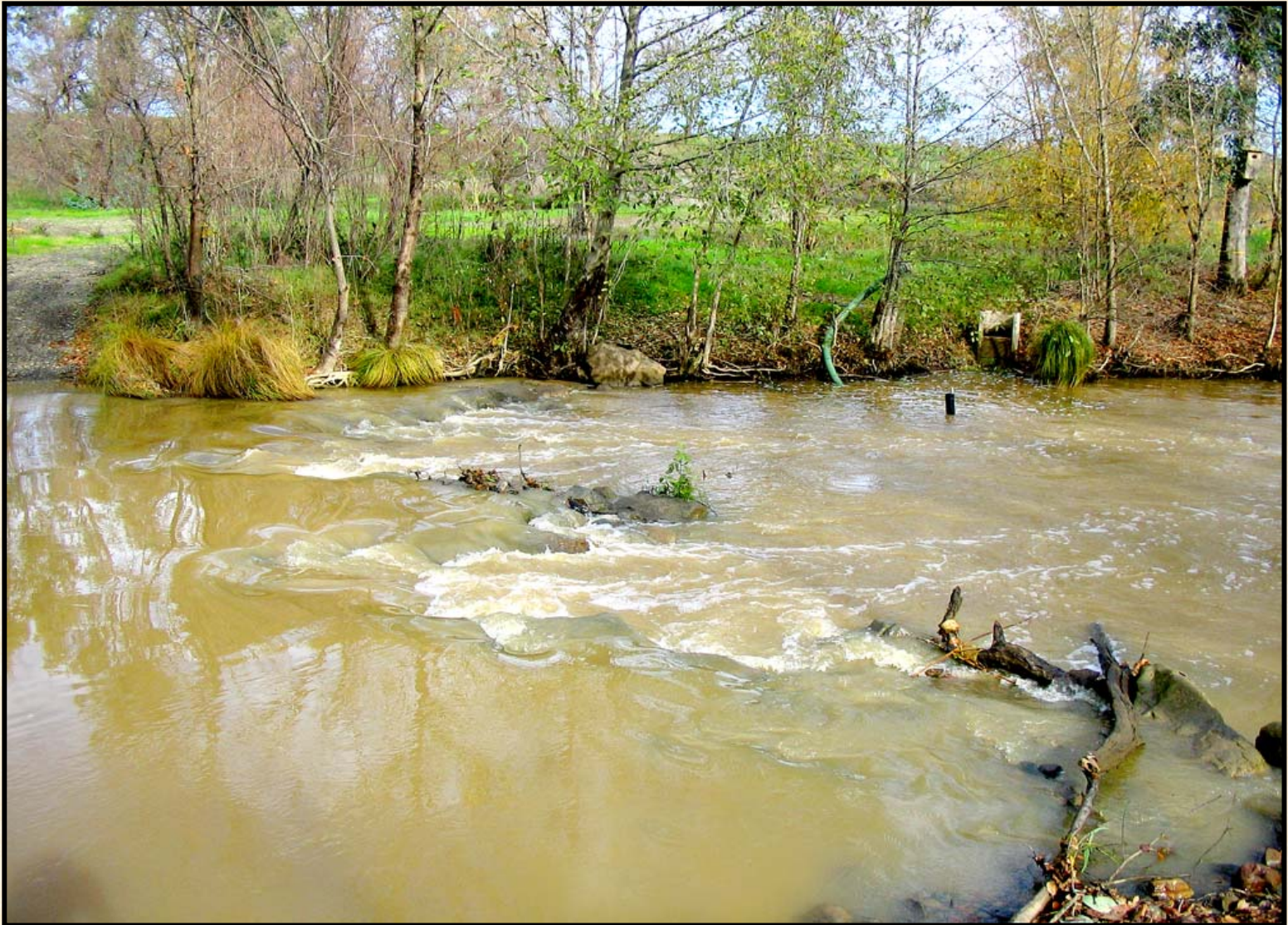


Hasbrook "W" Weir



Rick Poore, hydromorphologist

Weir has withstood 14,000 CFS



Yolo Housing Project



SWRCB / CALFED – Prop 13 Environmental Justice

Yolo Housing Weir (2)



I-505 – Future “W” Weir Site



Dry Creek Confluence



DWR – Urban Streams Program

Wildlife Conservation Board

Solano County Trans. Board

Dry Creek Confluence – Stabilize Bank



Design Channel – Locate original creek bed



Dry Creek Design Channel



Re-aligning 1000 feet of creek bed



Catch and move the fish



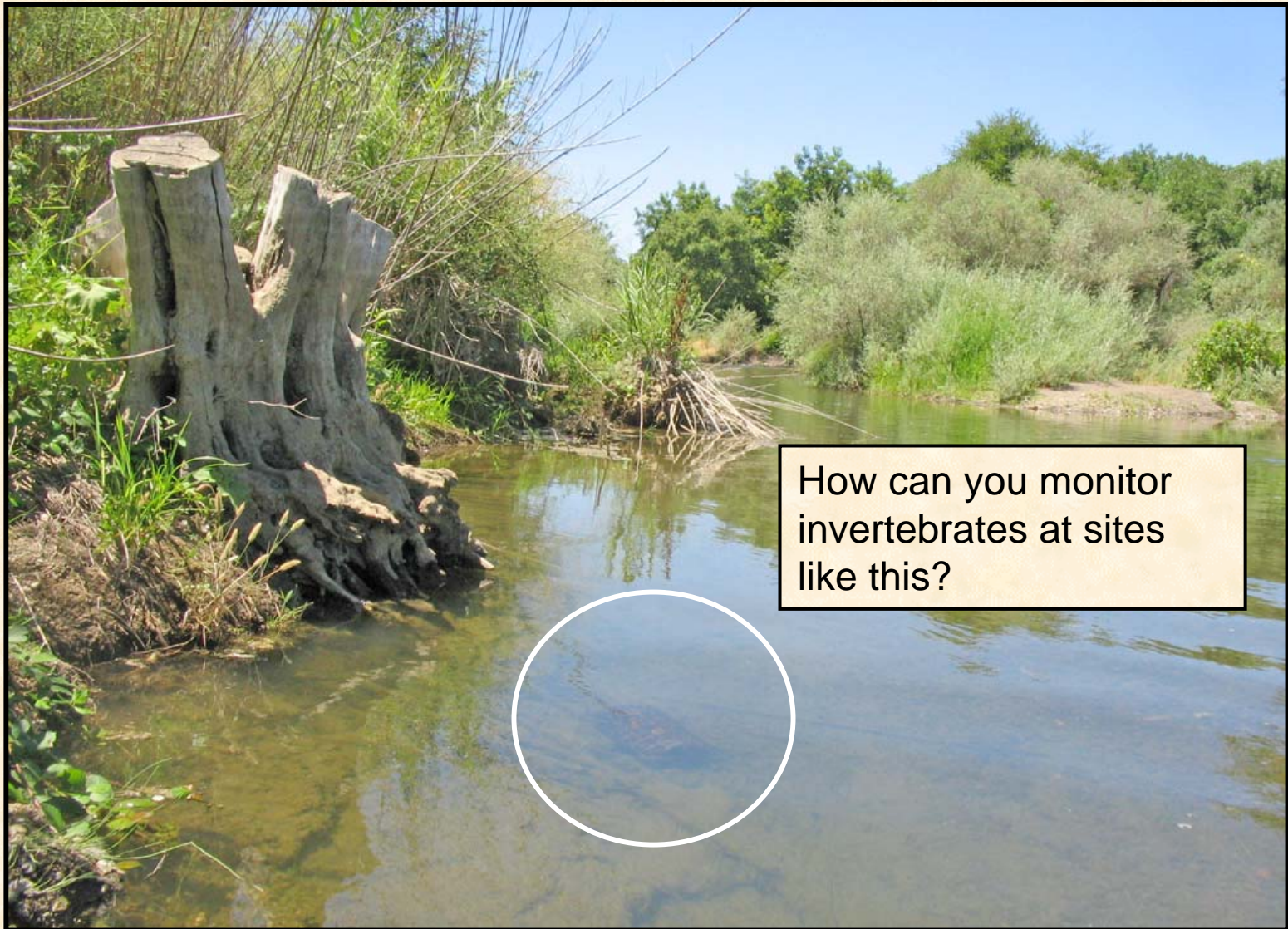
Protecting the banks - Revegetation



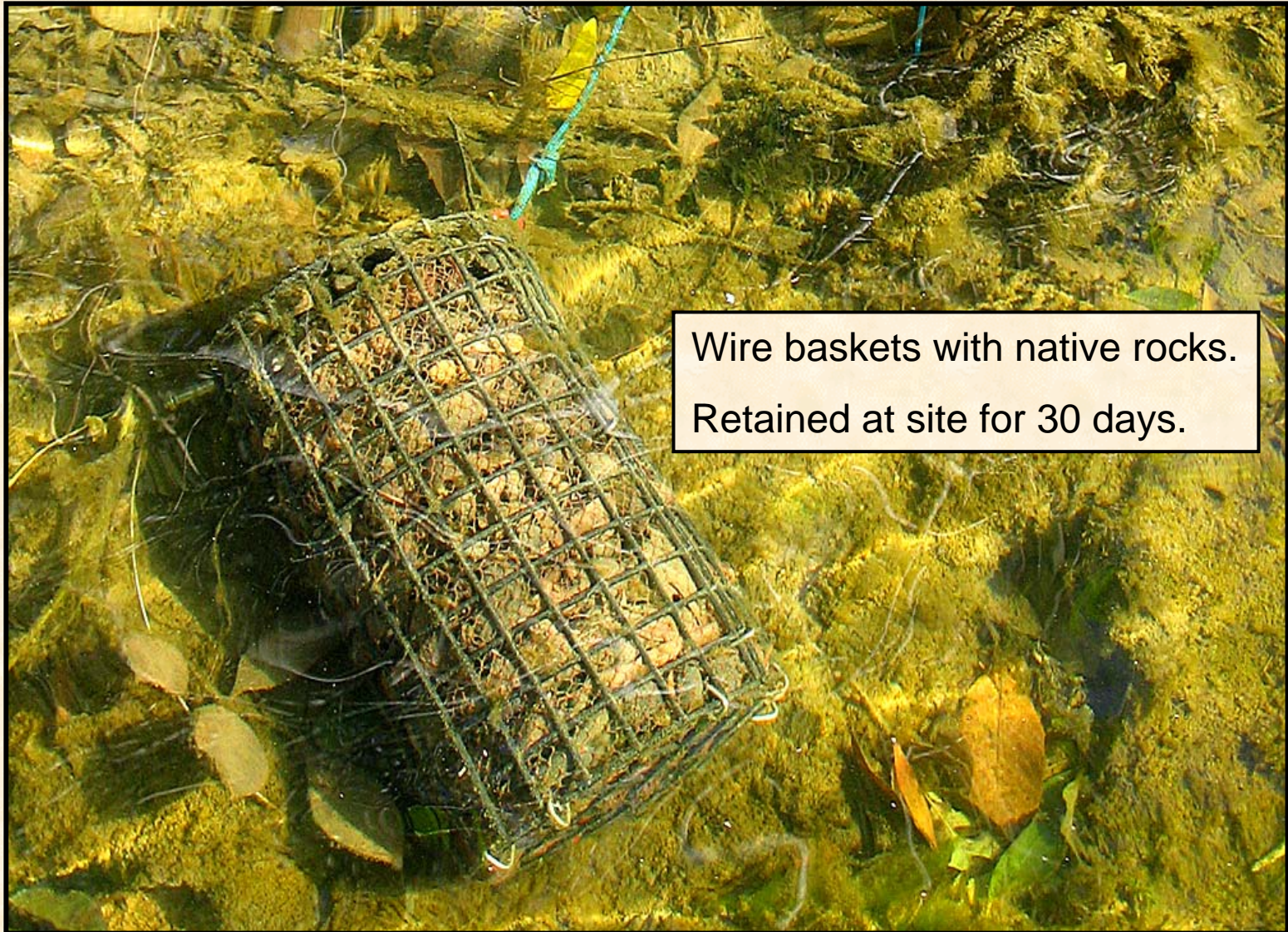
Conservation Corps – Revegetation



Invertebrate Monitoring in Restoration Projects



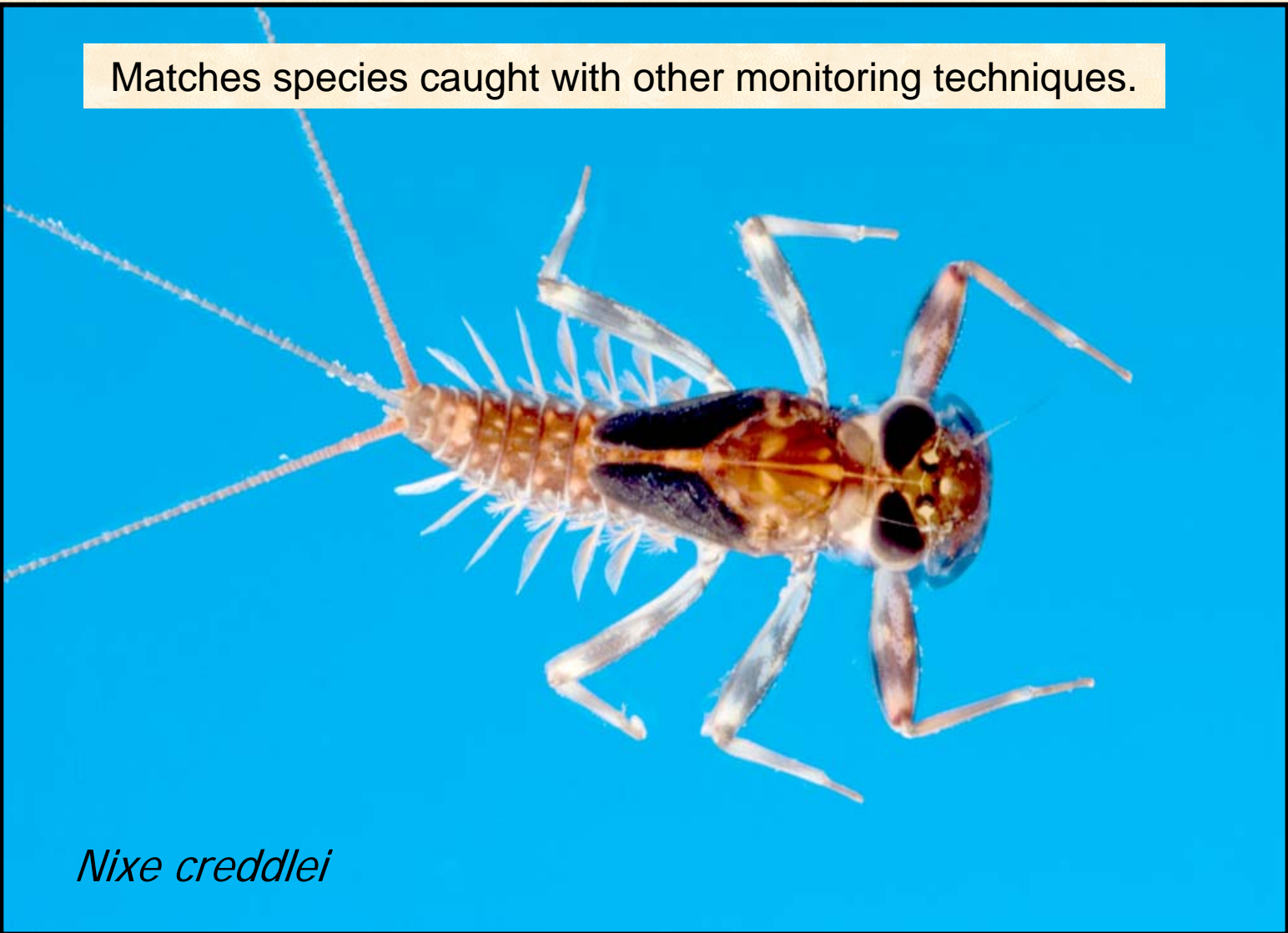
Invertebrate Monitoring in Restoration Projects



Wire baskets with native rocks.
Retained at site for 30 days.

Riffles

Matches species caught with other monitoring techniques.



Nixe creddelei

Pools / Sediment Beds



Tricorythodes minutus

Macrophyte Beds



Callibaetis sp.

Identification to Species when possible



Callibaetis sp.

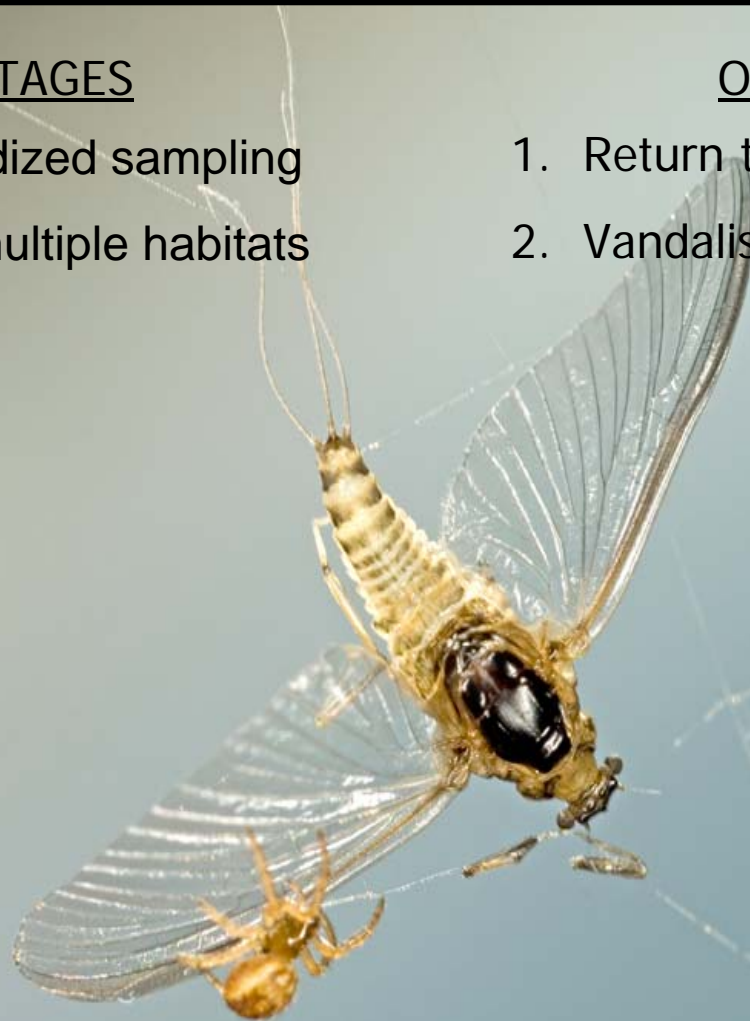
Obstacles / Advantages

ADVANTAGES

1. Standardized sampling
2. Use in multiple habitats

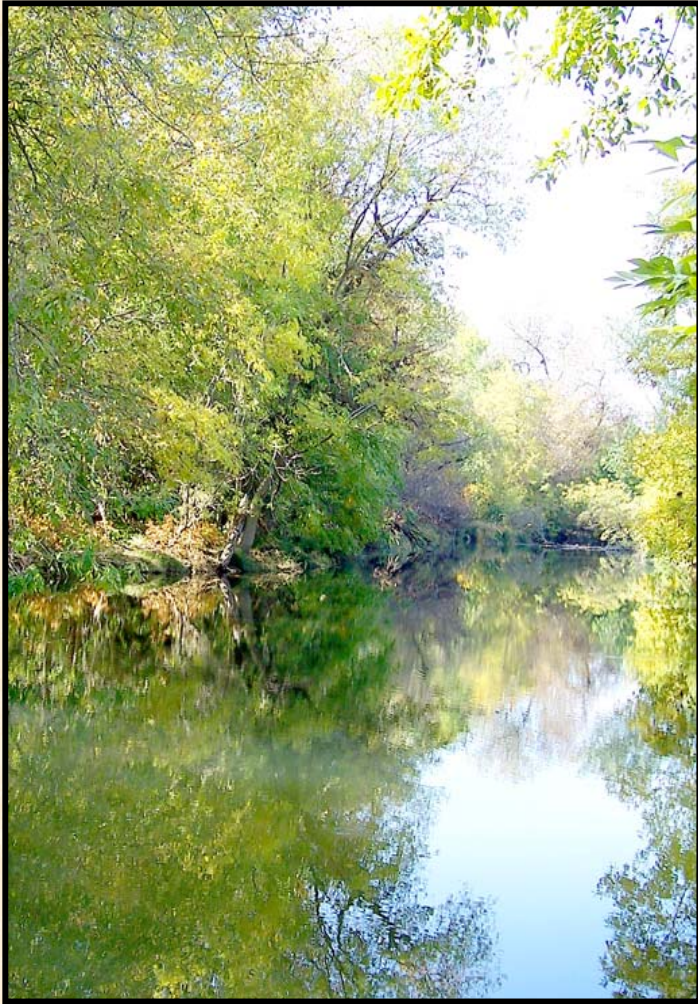
OBSTACLES

1. Return to collect samples
2. Vandalism



Tricorythodes minutus

Preliminary Results - Hasbrook



58 invertebrates / basket

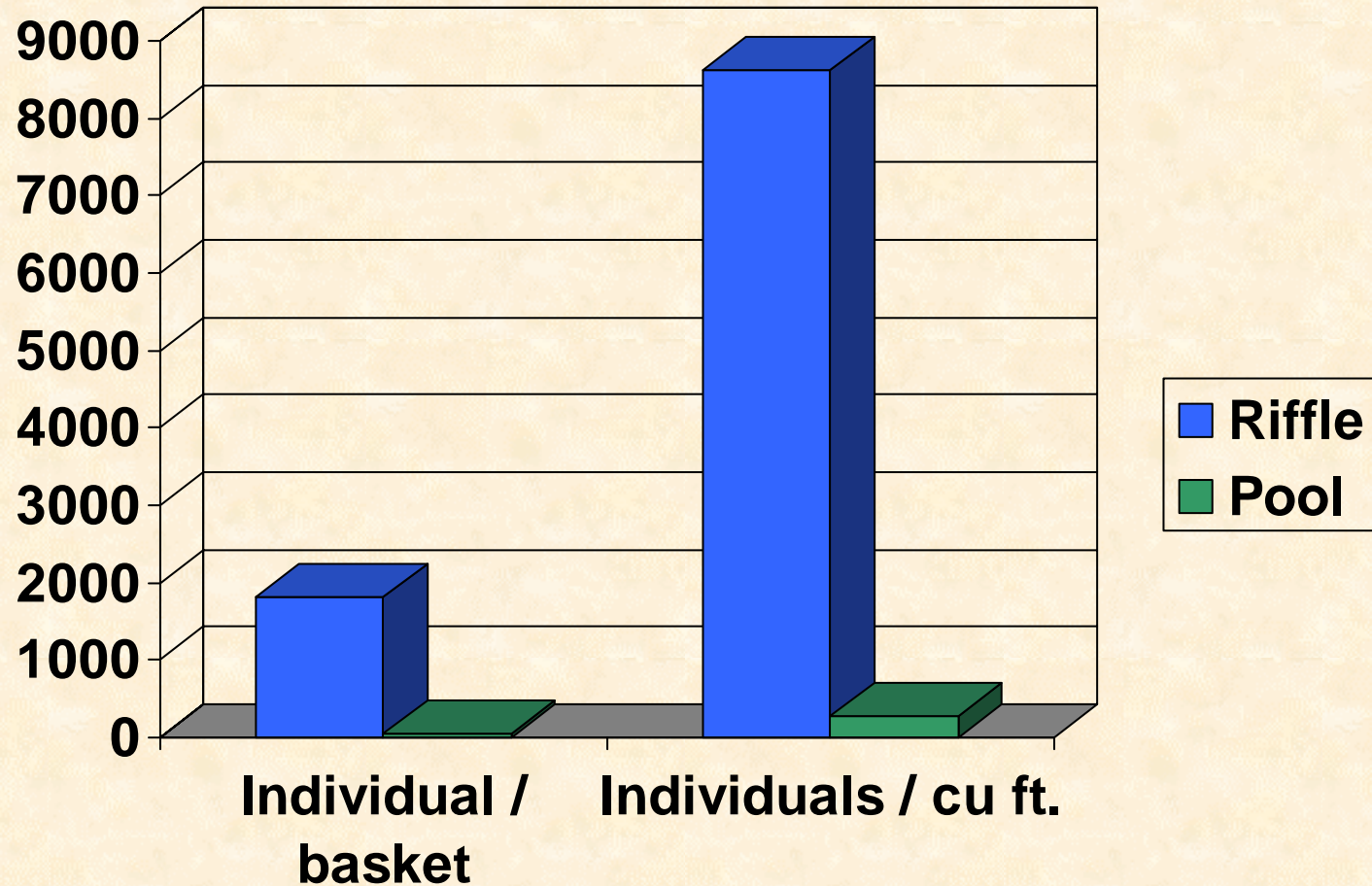
275 invertebrates / cu.ft.



1819 Invertebrates / basket

8617 invertebrates / cu ft.

Preliminary Results: Hasbrook Monitoring



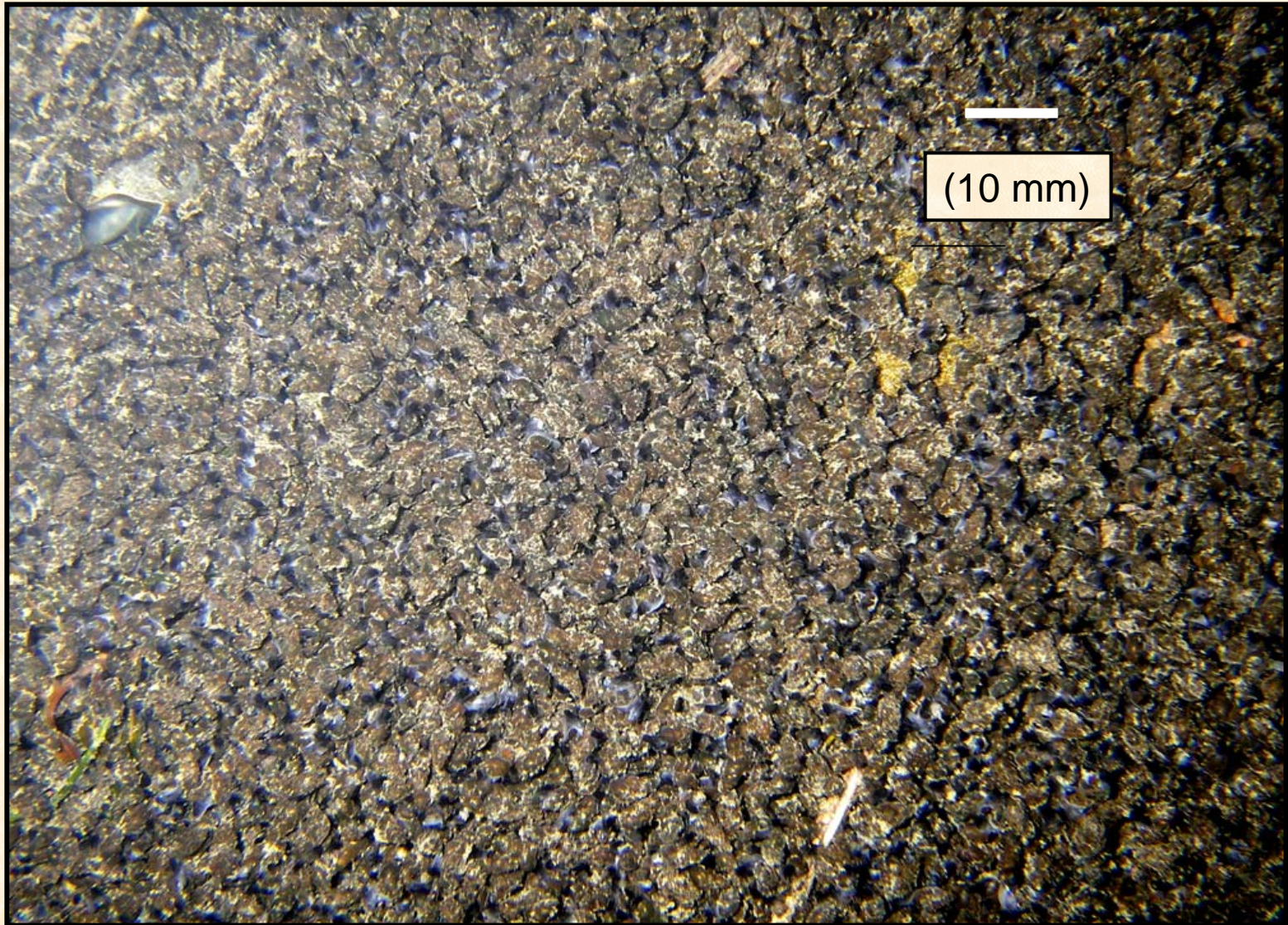
New Zealand Mudsnail Infestation

Severe water quality issues

1. increased nitrogen
2. altering nitrogen cycle



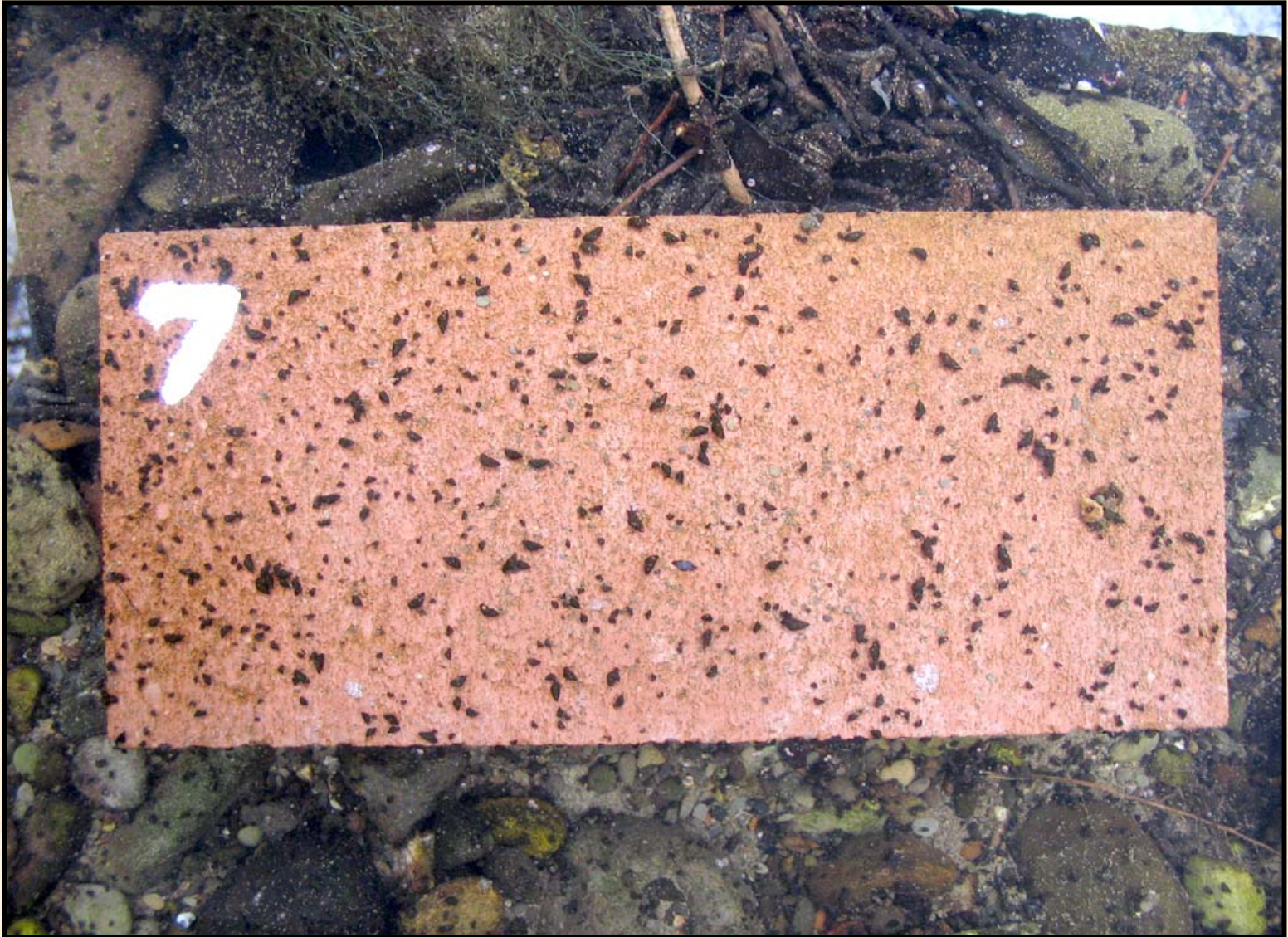
High Density – 500,000 NZMS / sq. m



New Zealand Mudsnail Monitoring



Photogrammetric Monitoring



Thank You - Questions

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